Laparoscopic cholecystectomy for acute cholecystitis

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Summary. Because laparoscopic cholecystectomy reduces hospitalization time and postoperative disability, it is being offered to an increasing number of patients with symptomatic gallstones. Nevertheless, acute cholecystitis is still considered by many surgeons to be a relative contraindication. Our standard approach has been to perform laparoscopy on all patients considered candidates for cholecystectomy. From June 1990 to October 1991, the authors personally performed laparoscopic cholecystectomy on 110 patients, 29 (26%) of whom had pathologically confirmed acute cholecystitis. Of these, nine had evidence of gangrene, perforation, or abscess formation. It was necessary to convert to open cholecystectomy in four (14%) patients. In each, inflammation or dense adhesions precluded the performance of a safe operation. The hepatorenal space was drained in 12 (41%) and cystic dust cholangiograms were performed selectively. The mean operating time was 108 min. There were no intraoperative complications. One patient developed a prolonged postoperative paralytic ileus and two patients were noted to have postoperative common duct stones. There were no deaths. The average postoperative stay for laparoscopic cholecystectomy was 2.6 days. We conclude that the advantages of laparoscopic cholecystectomy can be safely and effectively extended to the majority of patients with acute cholecystitis.

Key words: Laparoscopic cholecystectomy – Acute cholecystitis

Since its original description by Langenbuch in 1882 [9], cholecystectomy has become the "gold standard" [11] for the treatment of symptomatic gallstones. In an effort to reduce the disability associated with the cholecystectomy incision, alternate forms of therapy have been developed. These have included the use of oral desaturation agents, extracorporeal shock-wave lithotripsy, percutaneous contact solvents, percutaneous drainage and stone removal techniques, and various combinations of these maneuvers [24]. Langenbuch observed that "the gallbladder should be removed not because it contains stones but because it forms them" [9]. Only laparoscopic cholecystectomy achieves both the reduced disability and cure of the disease.

Twenty percent of patients undergoing cholecystectomy have acute cholecystitis [11]. Initial reports on laparoscopic cholecystectomy considered acute cholecystitis an absolute or relative contraindication [4, 14, 18, 19]. In some centers, this restriction still exists. However, with increasing experience, most groups have not excluded patients with acute cholecystitis [16].

This report is based on our personal experience with laparoscopic cholecystectomy for acute cholecystitis at St. Luke's-Roosevelt Hospital Center, New York, New York.

Material and methods

Our standard approach has been to perform laparoscopy on all patients considered candidates for cholecystectomy. From June 9, 1990, to October 9, 1991, 113 patients were referred to us, and only three were not offered the laparoscopic approach. Of these, two had common bile duct stones that could not be cleared by endoscopic retrograde cholangiopancreatography while the third, an elderly, gravely ill man with acute cholangitis and sepsis underwent cholecystostomy. No patient was ever excluded simply because acute cholecystitis was the preoperative diagnosis.

Accordingly, 29 patients, 26% of the group undergoing laparoscopic cholecystectomy, had acute cholecystitis. Eleven of our first 50 laparoscopic cholecystectomies were accomplished for acute cholecystitis. Surgical residents, with our assistance, performed the majority of these operations.

Results

Of the 29 patients with acute cholecystitis, there were 18 (62%) women and 11 (38%) men. The average age was 50 years with a range of 20 to 81. Four men and

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two women were morbidly obese (45 kg or 100 lb over ideal weight).

All patients presented with right upper quadrant abdominal pain. Twelve patients complained of nausea and/or vomiting. Other symptoms included fever in 10, prior attacks in 3, and jaundice in 1. Among the group, there were 5 with diabetes, 5 with arteriosclerotic heart disease, 5 with significant hypertension, 2 with cirrhosis, and 1 asthmatic. One patient with end-stage renal disease was on dialysis. Six patients had undergone prior abdominal operation.

Although all patients had right upper quadrant abdominal tenderness a palpable mass was noted in five. Twelve patients had temperatures greater than 100.4°F (38°C). One patient was icteric.

Laboratory examination revealed a leukocytosis of greater than 11,000 in 21 patients. Nine patients had various combinations of abnormal liver function tests. Isolated hyperbilirubinemia in the 1.5–2.5 mg/dl range was the most common. Ultrasonography diagnosed gallstones in all patients while 18 had findings strongly suggestive of acute cholecystitis, such as wall edema, "halo" sign, and pericholecystic fluid. A radionuclide scan was confirmatory in four patients.

On admission, all patients were fasted and received intravenous fluid therapy. Appropriate intravenous antibiotics were given preoperatively and for a 48–72 h period following operation. Prophylactic low-dose heparin and pneumatic compression stockings were used when indicated. Operation was undertaken as soon as the patient was properly prepared and the diagnosis confirmed. This varied from 12 to 96 h after admission.

Four patients underwent preoperative endoscopic retrograde cholangiopancreatography. In three, stones were cleared from the common bile duct while in the fourth patient, the duct proved to be normal.

All operations were performed using the standard four-trocar laparoscopic cholecystectomy technique. The open laparoscopic method was used in two patients. It was necessary to do a conventional open cholecystectomy in four (14%) patients. In each, acute inflammation obscured the anatomy, preventing safe dissection, while additionally, one patient had undergone prior major upper abdominal operation for hepatic trauma. The gallbladder was gangrenous in three of these four patients. These four cases were evenly distributed throughout the series. The hepatorenal space was drained in 12 (41%) of the patients. Cystic duct cholangiograms were performed selectively. The mean operating time for the entire group including those undergoing open cholecystectomy was 108 min.

There were three postoperative complications. One patient developed a prolonged paralytic ileus while two patients were noted to have postoperative common bile duct stones. One patient had the stones cleared with endoscopic retrograde cholangiopancreatography but another required open common duct exploration 6 weeks following laparoscopic cholecystectomy. Neither patient had clinical, chemical, or sonographic evidence of preoperative common duct stones. There were no wound infections or bile duct injuries. There were no deaths in this series. As a group, the postoperative length of stay averaged 3.8 days. It was 2.6 days for laparoscopic cholecystectomy and 6.3 days for open cholecystitis. Seven patients were discharged within 48 h of operation.

Discussion

The first laparoscopic cholecystectomy was performed by Phillipe Mouret of Lyons, France, in 1987 [24]. In 1988, laparoscopic cholecystectomy was successfully accomplished by Dubois, Reddick, and Perissat, respectively [24]. Patients with acute cholecystitis were excluded from all the early series. Reddick [18, 19] noted that "there should be no evidence of acute cholecystitis (elevated white blood count, fever, acute abdomen)". Three of Dubois' [4] original 39 patients had "pyocholecystis" and were treated by open cholecystectomy although it was stated that "with more experience and better-adapted instruments, indications may be extended." Likewise, Perissat [14] excluded acute cholecystitis and gallbladders shown on ultrasound to have a wall thickness of over 4 mm.

The sole modification that has been made in the care of our patients with acute cholecystitis is the operative approach. On admission to the hospital, prompt attention is given to both diagnosis and treatment. Intravenous antibiotics and fluid resuscitation is carried out coincident with the laboratory and imaging work-up. General medical problems are corrected. Only after the diagnosis is confirmed and the patient's condition is stabilized is laparoscopic cholecystectomy performed. This preparation usually takes between 12 and 96 h. Low-dose heparin is administered when indicated.

With the exception of two patients with common bile duct stones that could not be cleared with endoscopic retrograde cholangiopancreatography and a third seriously ill elderly man with acute cholangitis and sepsis, our approach, from the beginning of our experience, has been to perform laparoscopy on all patients referred to us as candidates for cholecystectomy. Even though laparoscopic cholecystectomy for acute cholecystitis was often technically more demanding than elective laparoscopic cholecystectomy, as indicated by our mean operative time of 108 min for the former and 70 min for the latter, nevertheless, it was usually quite feasible, and conversion to open cholecystectomy, if necessary, was easily accomplished. Furthermore, since 20% of patients with gallbladder disease have acute cholecystitis, these patients would otherwise be denied the potential advantage of laparoscopic cholecystectomy. Finally, our experience indicates that there is often a disparity between what clinically is thought to be an elective case but which at the time of laparoscopic cholecystectomy is acute cholecystitis. This observation has been made by others [1].

In our series of 110 patients who underwent laparoscopic cholecystectomy, 29 (26%) had pathologically confirmed acute cholecystitis and there was evidence

of gangrene, perforation, and/or abscess formation in nine. Although this incidence is similar to that of other series that did not exclude patients with acute cholecystitis [5, 13, 26], most reports are in the range of 2.3% [3] to 13% [2] with a mean of 8.8% [1, 6, 23, 25]. In addition to our selection process, this can probably be best explained by the fact that ours is an acute care hospital with an active urban emergency department, whereas many other series come from regional centers.

Conversion to open cholecystectomy was necessary in four (14%) of our 29 patients. In no case was this necessary because of an intraoperative complication; rather, inflammation and dense adhesions obscured the anatomy, preventing safe dissection. Three of these gallbladders were gangrenous; the fourth occurred in a patient who had undergone prior upper abdominal operation for hepatic trauma. The reported rates or conversion to open cholecystectomy for acute cholecystitis range from 3.4% [23] to 33.3% [6] with a mean of 6.9% [1, 2, 5, 6, 13, 23, 25, 26]. Converting to open cholecystectomy should not be considered a complication but rather a matter of surgical judgment. On the other hand, our conversion rate for elective laparoscopic cholecystectomy is 5.5%, while the rate in reported series averages 4.1%, [1, 4, 7, 8, 10, 14–16, 18, 19, 21, 22, 27] with a range of 1.8% [23]–13.3% [21].

In contrast to elective cases, laparoscopic cholecystectomy for acute cholecystitis can be quite technically challenging and much has been written about operative modifications [1, 3, 6, 20]. Furthermore, patients with acute cholecystitis are generally sicker and usually the operation is performed under emergent or, at least, urgent circumstances. Nevertheless, of the nearly 500 patients reported to have undergone laparoscopic cholecystectomy for acute cholecystitis, there have been no deaths, nor has the morbidity been different than for elective procedures. This has been our experience as well.

The performance of laparoscopic cholecystectomy for acute cholecystitis should not be undertaken by the "novice" [17]. The authors personally performed the first 25 laparoscopic cholecystectomies, of which three were for acute cholecystitis. Since then, the vast majority of cases have been performed completely or in part by surgical residents under our supervision, and this has included our series of patients with acute cholecystitis.

Our experience reveals that the average postoperative length of stay for patients, including those who underwent open cholecystectomy, is somewhat greater for acute cholecystitis as compared to elective laparoscopic cholecystectomy (3.8 days vs 2.4 days). This delay was not due to prolongation of the hospitalization as a result of complications but rather to the fact that our custom is to usually continue intravenous antibiotics in the postoperative period for 48–72 h. Furthermore, 12 (41%) of our patients underwent drainage of the hepatorenal space, and usually the drain was not removed until the second or third postoperative day.

In contrast, none of our elective cases underwent hepatorenal space drainage.

Finally, it can be concluded that laparoscopic cholecystectomy for acute cholecystitis can be accomplished with a low morbidity, a shortened length of stay, and a rapid return to normal daily activity for patients. Only surgeons experienced in laparoscopic cholecystectomy for elective gallbladder disease should undertake this procedure for acute cholecystitis. It is likely that surgical residents, formally trained in laparoscopy during their residency, will perform laparoscopic cholecystectomy for acute cholecystitis as well if not better than established surgeons who learn the technique after residency [12].

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